

CATs to the Rescue!



Classroom Assessment Techniques (CATs) measure what students are learning in the midst of the teaching and learning process, and then provide quick feedback that you can use to guide improvements in class. For additional CATs, see *Classroom Assessment Techniques* by Angelo and Cross or search online. This handout includes a few ideas to get your started.

It may be helpful to have help or feedback from colleague(s) when developing tools specific to your discipline. Additionally, always take the time to explain your reasons for using assessment techniques to students beforehand, and share when and how you plan to respond to their feedback. Ensure students understand that their responses on these assessments will not be included in their course grade and are instead designed to help you as an instructor.

Background Knowledge Checks

This Classroom Assessment Technique is designed to help determine the most effective starting point for a lesson or course and the appropriate level at which to begin instruction. The technique will collect specific feedback on students' prior learning, and it can be especially helpful when used at the beginning of the semester or at any point before starting discussion of a new topic, concept or subject.

- Consider what students might already know (or think they know) about the topic, concept or subject. Try to find at least one point that most students are likely to know, and use that point to lead into other, less familiar points.
- Prepare two or three open-ended questions, a few short-answer questions, or 10-20 multiple-choice questions that will uncover students' existing knowledge of a topic, concept or subject.
- Hand out questionnaires or provide your questions on a PowerPoint slide or the board. At the next class meeting, provide the results to students and tell them how you will use that information to inform your teaching.

Adapted from: Angelo, T. A. & Cross, K. P. (1993). *Classroom Assessment Techniques*. San Francisco, CA: Jossey-Bass.

Conferences/Interviews

Conferences or informal interviews between you and your students can be used to exchange information, share ideas, and give you a better understanding of students' capabilities at the beginning of a unit or course. Conferences might be held to gain greater understanding of students' thinking and suggest next steps, assess students' level of understanding particular concepts, or review and clarify what students already know.

Adapted from: http://eworkshop.on.ca/edu/pdf/Mod21_assessment_strgs.pdf.

Graphic Organizers

Graphic organizers help you understand students' prior knowledge of a subject and may help you with follow-up assessments as well. Graphic organizers allow students to visually organize their thoughts about a subject. Potential graphic organizers include:

KWL Charts—Students list what they *Know* and what they *Want* to know about a topic, and later add what they have *Learned* about that topic. You can ask students to complete the first two sections of the chart before beginning a new class or unit, and then have them complete the last column of the chart at the end of the class or unit.

KWL Chart		
What I Know	What I Want to Know	What I have Learned

Adapted from:

http://www.ehow.com/list_7636683_diagnostic-assessment-tools.html.

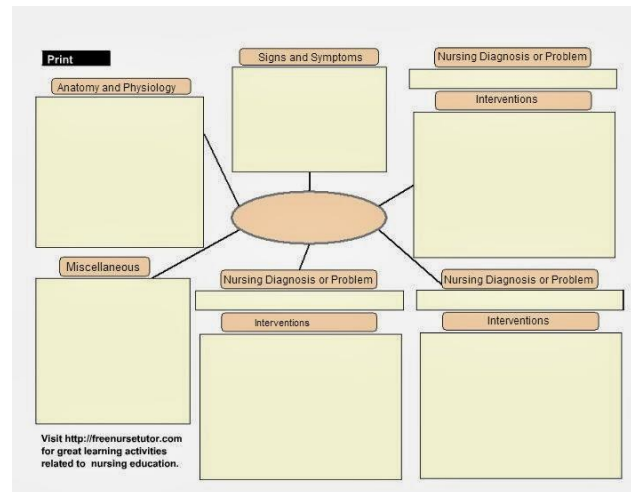
Mind/Concept Maps—Students place the central topic in the center of a page, and then write and connect words or short phrases that relate to the main topic. You can use these maps to assess how much students know about a particular topic. Maps can be returned to students so they can add additional information as they learn throughout the course/unit.

Adapted from:

<https://blog.ehrtutor.com/tag/concept-map>.

More organizers available at:

<https://my.hrw.com/nsmedia/intgos/html/igo.htm>



Journals

If you assign journals throughout the semester, you can use a first journal entry to ask students what they already know about a subject or how they feel about that subject. Otherwise, follow the same format your journals will follow throughout the rest of the course so that students are not confused about different expectations from one week to the next.

Adapted from: http://eworkshop.on.ca/edu/pdf/Mod21_assessment_strgs.pdf.

Memory Matrix

In a Memory Matrix, students complete a table in which row and column headings are complete but cells are empty. The rows and columns provide course content or topics that students need to identify and distinguish from other content or topics. For example, an introductory economics instructor may use the Memory Matrix below:

	Unit of Analysis	Demand depends on	Supply depends on
Macroeconomics			
Microeconomics			

Students fill in the blank cells with appropriate information within the time you have allotted (typically 5-10 minutes). Instructors can use the results to gauge students' comprehension of course content and determine if any of the related topics should be reviewed.

Adapted from: Angelo, T. A. & Cross, K. P. (1993). *Classroom Assessment Techniques*. San Francisco, CA: Jossey-Bass

Misconception/Preconception Checks

This technique focuses “on uncovering prior knowledge or beliefs that may hinder or block further learning.” As Angelo and Cross state, “The greatest obstacle to new learning often is not the student’s lack of prior knowledge but, rather, the existence of prior knowledge.”

- Identify some of the most problematic and common misconceptions or preconceptions students bring to your course.
- Select a few of these ideas and beliefs, preferably those that are likely to interfere most with learning in your course. Create a questionnaire to gain information about your students’ thoughts about these ideas and beliefs.
 - Multiple-choice questionnaires are easy to analyze and help ensure the anonymity of student responses.
 - Short-answer questions can provide more useful information, but they may compromise anonymity.
 - Likert-scale responses can provide information about how strongly the students hold the ideas and beliefs.
- Before using the questionnaire, think through your reaction to likely responses. Remove questions and topics you do not feel prepared to address.

Adapted from: Angelo, T. A. & Cross, K. P. (1993). *Classroom Assessment Techniques*. San Francisco, CA: Jossey-Bass.

Performance Tasks

Use a performance task to have students create, produce, perform, or present something related to knowledge you would expect students to have when they begin the unit or course. Caution should be exercised when using performance tasks at a diagnostic level; there should be support available for students who do not have the previous knowledge, skills, or abilities required to complete the assessment.

Adapted from: http://eworkshop.on.ca/edu/pdf/Mod21_assessment_strgs.pdf.

Student Surveys

Students can complete a survey about their ideas regarding the topics you are going to cover. If you are asking for students' opinions, ensure individual survey results are not tied to particular students so that your perceptions of those students are not affected by their survey responses.

Assess Yourself

Having students rate their own level of learning can help them not only think about the course material more deeply, but also understand what would be required for them to move to the next level. Assess Yourself criteria are used extensively in K-12 schools, but it can easily be adapted for use in the college classroom. Once students are used to using this assessment technique, it will be a simple and quick tool for gaining information about your students' level of knowledge, skills, and abilities.

Use the example below to create a discipline- or lesson-specific version of the Assess Yourself framework.

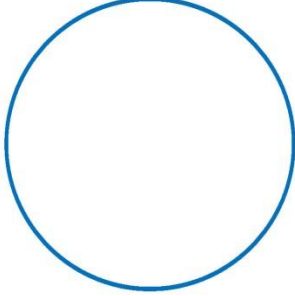
Assess Yourself Which statement best describes you?	Novice I'm just starting to learn this and I don't fully understand it yet.	Apprentice I'm starting to understand, but I probably need someone to coach me through it.
	Practitioner I can mostly complete this alone, but I may need occasional help.	Expert I understand this well and could teach it to someone else.

Circle vs. Square

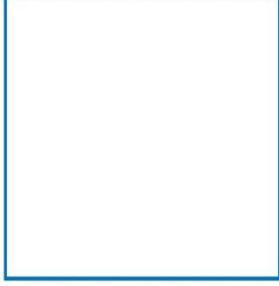
Use the Circle vs. Square technique to gain better knowledge about both the items your students know well and those that are causing difficulty.

This is anonymous – do not put your name on this form. What topic is still unclear? What topic do you now understand? Please share in the shapes below.

What question keeps circling? I'm still confused about. . .



What are you totally square on? I now understand. . .



Adapted from Schantz, Rebecca. *Your CATs Starter Kit* (booklet distributed at the 2005 Illinois Mathematics Association for Community Colleges (IMACC) Annual Conference)

Helping vs. Hindering

Use this form to determine what is helping your students in your course as well as what is hindering their learning. Knowing how your students are learning (or why they are having trouble learning) can help you better develop or adapt your lesson plans and course activities.

What is HELPING your learning? What is HINDERING your learning?		
<i>This is anonymous – do not put your name on this form. Please take a few minutes to fill out the chart below. Try to be as specific as possible.</i>		
	What's Helping?	What's Hindering? (Obstacles)
Instructor		
Myself		
Classmates		

Journals

Learning and Response Logs are two more specific types of journals that can be used as formative assessment. In Learning Logs, students reflect on the material they are learning, including their thoughts as they are learning something new as well as any questions that they need to have clarified. Students can then make connections, think about their learning goals, and reflect on their own learning processes. In Response Logs, students are given the opportunity to respond to questions, ask their own questions, collect information about the text, and reflect on what they have read.

Adapted from: <http://wvde.state.wv.us/teach21/LearningResponseLogs.html>

Laundry Day

In Laundry Day, students can evaluate their own learning in preparation for an exam, and then use that evaluation to continue preparing for the exam. Students use their homework or notes as evidence of where they belong, selecting from Tide, Gain, Bold and Cheer. Their chosen “detergent” defines what types of exercises they will be given to prepare for the exam. Cassandra Erkens defines the categories in the following way:

- Tide – students select this detergent if they believe the tidal wave of information might drown them. In the Tide corner the learning activities involve a comprehensive review of the information and/or an activity that might help the learners experience the information in a different way. Students from the Cheer group often times hang out here to mentor and find creative ways to represent the information that their peers might better understand.
- Gain – students select this detergent if they understand the basics of the concepts taught, but seem to be missing some of the nuances or finer details. Learning activities in this corner involve investigation as students identify the details around which they are unsure and then examine the text, homework examples, internet sources and other classroom resources to gain their answers.
- Bold – students select this detergent if they are fairly confident they will pass the unit exam, but still have a few niggling questions. Often times, Bold activities involve creating possible review activities for future classes or test questions for the teacher to consider and then challenging each other, as they might in a game show, with completing their own activities.
- Cheer – students select this detergent if they are certain they will be successful on the exam. Cheer activities involve enrichment activities to extend and refine their learning. One such activity involves helping the students in the Tide section. Interestingly, a majority of the students in this category select the option of helping those in the Tide category.

Adapted from: https://wvde.us/wp-content/uploads/2018/06/2018formativeassessment_toolkit.pdf

Ice Breakers

Most of us use some type of ice breaker early in our courses. These ice breakers help us begin to learn about our students and help students begin to learn about each other. You can also use ice breakers as high-level diagnostic assessment tools. Adding diagnostic assessment to your ice breaker may be as simple as asking students to identify what previous knowledge they have about the subject you are teaching, or it may be as complex as developing specific activities that revolve around diagnostic assessment of your course learning outcomes. For example, <https://docs.google.com/file/d/OBxPAzaNyA0IKWFJ4WXZRdm9fYjQ/edit?pli=1> shows a “human bingo” game based on the outcomes of a teacher education workshop.

Muddiest Point

The Muddiest Point CAT requires little preparation time for the instructor and only a few minutes of time for the students. It is used to assess what students are having trouble understanding during a class. It provides the instructor with feedback on items that are confusing, and it can be used at different intervals.

The instructor can use the Muddiest Point technique when covering complex or confusing information, before starting a new subject, or at the end of a class. The technique basically consists of the instructor asking the students to write down or post on a class discussion board what they have had trouble understanding during the class: “What is the muddiest point in this session?” If asking the question during the class, the instructor can gather the papers and discuss some of the items mentioned.

Verbal answers can also be used instead of written responses to facilitate discussions on the muddiest points. If the muddiest point technique is used at the end of a class, papers can be taken up, reviewed, sorted by subject, and discussed at the beginning of the next class. If an electronic form is used, students can be encouraged to respond outside of class to classmates, clarifying points they understood.

Adapted from: Angelo, T. A. & Cross, K. P. (1993). *Classroom Assessment Techniques*. San Francisco, CA: Jossey-Bass

Response Cards

Instructors can use flashcard sets for a quick check of understanding in the classroom. Each student in the class is given a flashcard set which can be used to indicate an answer to a question posed by the instructor. Questions and up to four possible answers can be embedded on a PPT slide, written on the whiteboard, or projected on the document camera. Students are told to hold up their responses without looking at their classmates' responses. The instructor can easily scan the response cards and see if the majority of students are answering the question correctly. If not, further instruction or guided practice may need to be included in the lesson.



These cards may also be used for True-False and/or Agree-Disagree questions by using the back of the green/red cards.

Student Self-Assessments

Self-assessment allows students to review and reflect on their own personal progress in terms of knowledge, skills, and abilities. Self-assessment should lead students to a greater awareness of themselves as learners. In diagnostic assessment, students can reflect on what they know about a topic and previous experiences with this topic, much like they might with a journal entry.

Adapted from: <http://www.slideshare.net/pafirth/diagnostic-assessment-ideas-12934737>.

Think Pair Share

Think Pair Share is a summarization strategy that involves three basic steps:

Think: Tell students to ponder a question or problem. Give them time to think about the answer, and do not allow them to share their thoughts (yet).

Pair: Individuals are placed in groups of two to discuss their answer or solution to the problem. During this step, students may wish to revise or alter their original ideas.

Share: Students are called upon to share with the rest of the class.

Adapted from: https://wvde.us/wp-content/uploads/2018/06/2018formativeassessment_toolkit.pdf

Your Turn!

- Choose a CAT that interests you and that you haven't used before.
- Begin to develop a plan for using a CAT in a course this semester.
 - When will you use it?
 - What do you hope to learn?
 - Consider how you might use the information you learn to make improvements.
- Be ready to discuss your preliminary plan with the large group:
 - Briefly, what is your preliminary plan for using this CAT?
 - What benefits and challenges do you foresee?